

For
debate

A novel approach to outcome evaluation

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Outcome evaluation with respect to sexually transmitted diseases (STDs) is traditionally based on monitoring the trends in the number of infections diagnosed from year to year, but there are hazards to such an approach.

To give an extreme example, the incidence of gonococcal infection could be reduced to zero if all testing ceased or if a completely ineffective diagnostic method was used. Alternatively, if an attempt were made to introduce widespread screening for gonococcal infection in a similar fashion to cervical cytology, the number of infections diagnosed would rise dramatically, yet this would not reflect a genuine change in prevalence of infection.

Turning to a clinically realistic scenario, we have been running outreach clinics for prostitutes in Edinburgh since 1990. In 1992, we opened a city centre outreach clinic in conjunction with Scot-PEP, a self help group for prostitutes, which disseminates advice and information on safe sex, predominately to women working in the indoor sex industry.¹ This clinic began as an STD diagnostic service, but also encouraged other health promoting activities such as vaccination against hepatitis B. In trying to assess trends in how the clinic has been used by the women from year to year, we have discovered that simply counting the number of infections diagnosed is of limited value. This is partly because these numbers may be too small to allow statistical analysis, but there are also qualitative issues as demonstrated in the following example. Let us suppose that in the first year of operation an outreach clinic sees 90 women in whom 15 STDs are diagnosed, and that in the second year 65 women are seen in whom eight STDs are diagnosed. It is impossible to determine whether this is a successful outcome or not. Were fewer women seen because an increasing practice of safe sex resulted in less need for medical care, also reflected in the lower number of STDs diagnosed? Or was the service unpopular leading to fewer attendees in the second year? Did the treatment of STDs in the first year reduce the community prevalence of infection for the second year, or was there a significant turnover of women working as prostitutes, rendering comparisons between the 2 years unreliable? Was there a change to a more effective type of condom leading to fewer condom failures and hence fewer STDs in the second year?

Some of these points can be addressed, but it remains unlikely that evaluation based purely on number of infections diagnosed will give a complete picture of trends in safer sex behaviour. In the setting of prostitution, it may be more realistic to accept the inevitability of STDs—100% successful condom use is impos-

sible to achieve—and to note not only that an infection has been diagnosed, but also to assess the circumstances in which the diagnosis is made. For example, if a woman experiences condom failure but spontaneously attends the next available outreach clinic seeking an STD screen, any infection diagnosed should be looked upon in a different light from an infection diagnosed 2 years later following repeated episodes of pelvic inflammatory disease. Indeed, it is possible to construct a hierarchy of scenarios with respect to diagnosis. For example, a chlamydial infection as a result of condom failure:

- (1) asymptomatic, attends first available medical clinic for screening
- (2) asymptomatic, attends at a later date
- (3) minor symptoms—for example, vaginal discharge, attends for screening
- (4) complications—for example, pelvic inflammatory disease, attends for screening
- (5) complications, did not seek medical attention but was diagnosed opportunistically.

And for pregnancy:

- (1) using reliable back up contraception
- (2) condom fails, seeks postcoital contraception
- (3) early (medical) termination of pregnancy
- (4) late (surgical) termination of pregnancy
- (5) unwanted pregnancy—concealed/too late to abort.

We have tried to develop a different way of assessing the success or failure of outreach clinics, based on such a hierarchical approach looking at how the women use the service. Was attendance at the clinic “proactive, health promoting”, or was it “reactive, symptom driven”? Unfortunately, data collected retrospectively were insufficiently detailed to allow the use of our initial scoring system and therefore a much simplified version was devised. We divided attendances into “process”—screening, vaccination, contraceptive advice, and “outcome”—symptoms, diagnosis of an STD, request for termination of pregnancy (TOP). We awarded a positive score to “process” visits and a negative score to “outcomes”. A weighting to represent the significance of different issues was subjectively added. A request for TOP was given a strong negative weighting (it was not possible to separate early and late TOPs), as was the diagnosis of an acute STD (gonorrhoea, chlamydia, trichomonas, primary genital herpes). Strong positive weighting was given to request for contraceptive back up to condom use. We were particularly keen to encourage the use of the diaphragm as an additional barrier to the transmission of infection and thus it was given a strong positive score. Women attending for a full course of hepatitis B vaccination were

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Table 1 Scoring system

Positive scores		Negative scores	
Cap fitting	+10	Termination of pregnancy	-10
Hepatitis B vaccination (completed course within 1 year)	+10	Pelvic inflammatory disease	-10
Backup contraception	+5	Sexually transmitted infection*	-5
Screen after burst condom (within 2 weeks)	+5	Symptomatic screen	-1
HIV antibody test	+5		
Asymptomatic screen	+1		

*Gonorrhoea, chlamydia, *Trichomonas vaginalis*, infectious syphilis, primary herpes simplex virus.

Table 2 Proactive score*

Year	New patients	Return patients	Total patients	Score/patient "proactive score"
1992	48	0	48	6.9
1993	52	21	73	3.1
1994	45	41	86	6.1
1995	71	33	104	7.2
1996	79	31	110	4.3
1997	61	64	125	5.0

*Calculated by adding together the total positive score, subtracting the total negative score, and dividing by the total number of patients attending for any given year.

required to make three visits and therefore received a strong positive weighting (table 1). Although the basis for the weighting system was subjective, calculations were repeated with several different variations with no effect on the overall results.

A total score could thus be calculated for each year. This was divided by the number of patients seen to give a score per patient, or proactive score, as shown in table 2.

Table 3 shows some of the raw data in terms of the actual number of patients seen.

A number of observations can be made. Firstly, the clinics are attracting an increasing number of women. The low level of patients returning in later years may reflect our impression that prostitution is often a transitory occupation. Looking at the broader picture of "proactive health promoting" clinic use, a number of changes become discernible. The first year saw a high proactive score, which might be explained by a preponderance of highly motivated women keen to use the new facility. In the second year we may have encouraged reluctant attendees, less motivated to take care with sexual health, resulting in a poorer score. This was the peak year for requests for termination of pregnancy. In response, in 1994 we emphasised the importance of backup contraception. The improving figures for that year and 1995 were encouraging and suggest to us that the added emphasis placed on contraception may have had some effect. The poor results in 1996 are difficult to explain, but during this year Scot-PEP suffered staff shortages which could

Table 3 Sample of raw data

	Total number of patients seen in each year					
	1992	1993	1994	1995	1996	1997
Termination of pregnancy	3	12	5	6	5	5
Chlamydia	2	6	3	4	3	3
Cap	5	9	16	25	20	17
Screen after burst condom, within 2 weeks	2	6	9	9	7	18

Table 4 Progress of 1993 cohort

Year of follow up	Number of patients	Score	Score/patient "proactive score"
1 (1993)	52	86	1.6
2 (1994)	24	22	0.9
3 (1995)	9	29	1.5
4 (1996)	7	33	3.3
5 (1997)	4	20	5.0

have reduced access to safe sex advice. At the end of 1996 the project was relocated to a new premises leading to a decline in attendance in the first part of 1997 but an encouraging subsequent increase as reflected in the overall score for the year.

It is also possible to monitor progress on a cohort basis. Taking as an example women who first attended the outreach clinic during 1993, might contact with the medical team have an effect on subsequent health seeking behaviour?

Table 4 illustrates the proactive score for this particular cohort over time. It is encouraging to see the steady increase in the score over time, but this is open to interpretation in different ways. Clearly there is a marked fall out of patients. As already stated, this is in part because of the transitory nature of prostitution, but it may be that some women find the clinic unacceptable to use and either seek health care elsewhere or, worse, not at all. It would be pleasing to assume that the small number of women who continue to use the clinic after 4 or 5 years score well because of our health education intervention. However, these may simply be the women most motivated to look after themselves. With such small numbers it is impossible to draw conclusions. A study of a larger number of women followed over time would be interesting, but difficult.

Using this kind of model, evaluation of STD services can now be carried out at a variety of levels. In countries or regions where the STD rate is high, an increase in the number of asymptomatic sexually transmitted infections diagnosed could serve as an adequate marker of the success of a clinic. Where the STD rate is low, other markers—for example, unwanted pregnancy rate, may be evaluated. In any setting, additional health seeking behaviours such as hepatitis B vaccination, may be incorporated to give an overall "score" that can be repeatedly calculated to assess the impact of health promoting initiatives.

A successful service should diagnose significant numbers of asymptomatic infections, owing to a combination of attracting for screening those who have been at risk, and contact tracing of the (asymptomatic) partners of index cases.

In summary, we believe that evaluation of STD clinic work, especially in outreach settings, should be based on the way that patients use the clinic, rather than the specific diagnoses that are made. Successful clinics are used proactively by patients, and morbidity is reduced accordingly. This scoring system is as yet at a gestational stage. As with other scoring systems such as the Glasgow coma scale^{2,3} and the APACHE score⁴⁻⁶ it will evolve with time, hopefully becoming an acceptable and reliable

tool in assessing the success of health care in outreach settings. We would welcome comments from other workers in the field.

We are currently undertaking a prospective study of the use of the outreach clinic using variations of the scoring system, and plan to use a questionnaire to explore clients' perceptions of both the acceptability of the clinic and of their own risks. This type of approach to evaluation may also be applicable in other areas of medical practice.

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